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Niceforonia adenobrachia Ardila-Robayo, Ruiz-Carranza & Barrera-Rodríguez, 1996 (Amphibia: Anura: Craugastoridae): extension of geographical distribution in the Central Andes of Colombia

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Abstract: Based on two collected individuals, we extend the known distribution range of the endangered frog species *Niceforonia adenobrachia* (Craugastoridae) more than 40 km south of the nearest locality. This report is the first one for this species in the departamento de Quindío, and for the western slope of the Central Andes of Colombia.

Key words: Ranita fortachona; Quindío; frogs; threatened species; Cordillera Central.

The Andes of Colombia are recognized by its high diversity of species, many of them with small geographical distribution ranges (Kattan et al. 2004; Cadena et al. 2012). However, this region is also submitted to high deforestation and transformation rate of natural ecosystems (Cavalier and Etter 1995; Gonzalez et al. 2011), which imply a serious threat for the conservation of many of the endemic lineages present there (Rueda-Almonacid et al. 2004; Rodríguez-Mahecha et al. 2006; Renjifo et al. 2014). Among the more than 400 species of frogs in the Andes of Colombia (Bernal and Lynch 2008), *Niceforonia adenobrachia* (Craugastoridae; Figure 1) is categorized as critically endangered (CR) by the IUCN (Castro et al. 2004) and as Endangered (EN) by Ardila-Robayo et al. (2004). This is a rare frog species, whose individuals exhibit small body sizes (snout-vent length, SVL, mature females: 15.5–23.1 mm, mature males: 14.5–17.2 mm) and restricted distribution, between 3100–3872 m above sea level (a.s.l.) at the type locality in the municipality de Herveo and in "Campamento 4000" municipality of Ibague, departamento del Tolima, and in nearly localities on the border of departamento de Caldas, eastern flank of the Central Andes of Colombia (Ardila-Robayo et al. 1996; Acosta-Galvis 2015; Romero-Garcia et al. 2015). Here, we report the presence of

Figure 1. Dorsal and ventral view of *Niceforonia adenobrachia* (snout-vent length: 18.85 mm; voucher IAvH-Am-10322) and its forested habitat at El Porvenir, municipality of Córdoba, department of Quindío, Colombia.

N. adenobrachia by the first time in departamento de Quindío and western flank of Central Andes of Colombia, which extends the known distribution more than 40 km towards southward (Figure 2).

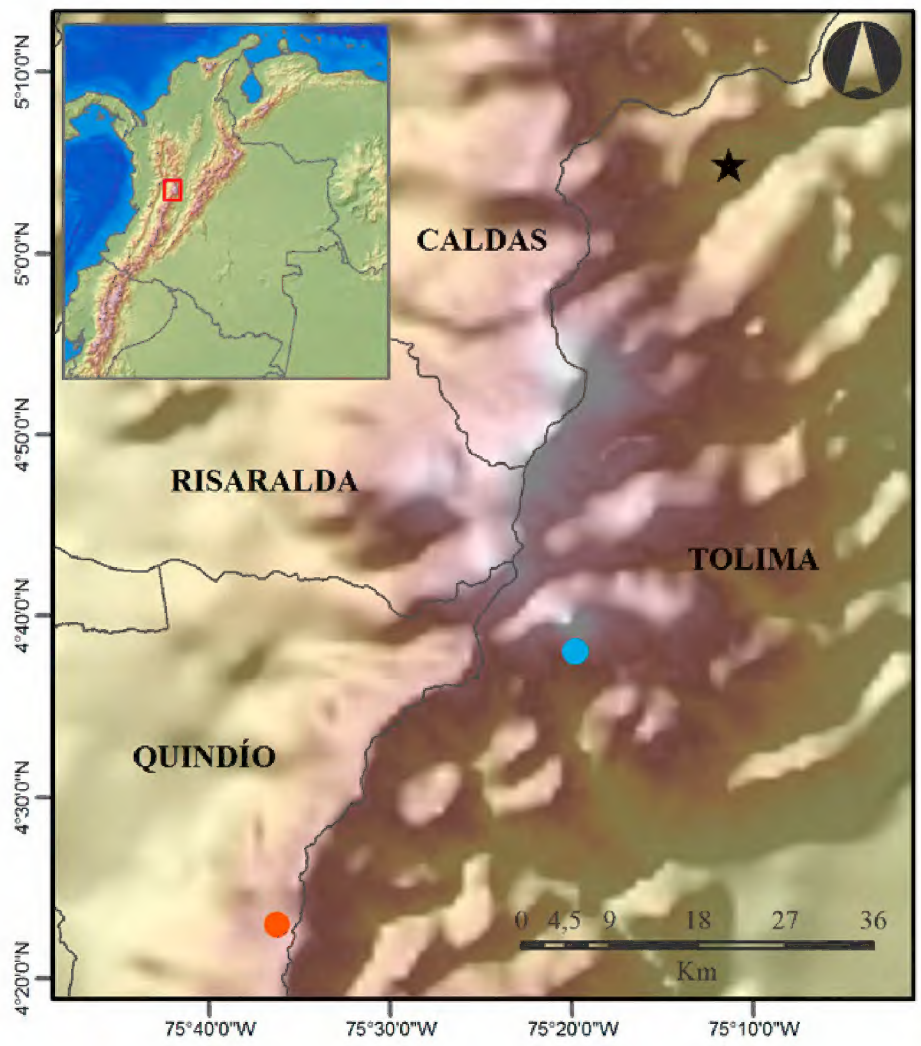

Figure 2. Geographic distribution of *Niceforonia adenobrachia*. The black star indicates the type locality (municipio de Herveo, departamento de Tolima, departamento de Caldas, eastern flank of the Central Andes of Colombia), the blue circle indicates the record by Romero-Garcia et al. (2015), and the red circle indicates the new distributional records reported in this manuscript (El Porvenir, municipio de *Córdoba*, departamento de Quindío, Colombia).

Between 10 and 19 April of 2014, a field expedition was conducted at Predio El Porvenir, municipality of Córdoba, department of Quindío, Colombia (04°22′56.7″ N, 075°36′14.1″ W; 3170 m a.s.l.). This locality is dominated by Andean forest with some open grassland areas (Figure 1). During diurnal searches we observed and recollected two males (SVL 18.8 mm each one), calling from leaf litter in forest interior and in an open area, near to a place used for cattle. The species was identified based on morphological characters such as: head narrow (not as wide as body); conical tubercles on the upper eyelid; differentiated tympanic membrane, but hidden under skin; dorsal skin smooth, with few small tubercles; ventral skin aerolate, without digital discs; cylindrical toes; prominent conic tubercle on the heel (Ardila-Robayo et al. 1996, 2004). One voucher was donated to the Herpetological collection of Instituto Alexander von Humboldt (IAvH-Am-10322), at Villa de Leyva, Boyacá, Colombia, and the other one was deposited in the herpetological collection of Universidad del Quindío (HerpetosUQ-0418), at Armenia, Colombia.

Our record of *N. adenobrachia* is particularly important given the restricted distributional range of the species. This species is listed as Critically Endangered because its area of occurrence and occupancy was believed to be less than 100 and 10 km², respectively (Castro et al. 2004). Although our record extends those areas, we believed that more information about population status and geographic distribution are necessary before reevaluating the threatened category of *N. adenobrachia*. The caution is due to the high transformation rate of forest into agrosystems, and the plans of mining exploitation in the Central Andes of Colombia. We hope that the new locality offers the opportunity for further behavioral, ecological, and biogeographical studies with this little known species.

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